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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/805,833	03/14/2001	Yoji Okazaki	699866/0041	4447

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EXAMINER
NGUYEN, MICHELLE P

ART UNIT	PAPER NUMBER
2851	

DATE MAILED: 08/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/805,833	Applicant(s) OKAZAKI, YOJI	
	Examiner Michelle Nguyen	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 June 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. In the amendment filed June 6, 2003, applicant remarks that claims 1-28 are pending. However, by a previous amendment filed February 27, 2003, applicant had cancelled claims 15-28. Therefore, only claims 1-14 are considered pending.

2. Applicant's arguments filed June 6, 2003 have been fully considered but they are not persuasive.

In response to examiner's reliance on the passage of DenBaars et al., which teaches that a gallium nitride pump source provides the advantage of allowing for the entire visible region of the wavelength spectrum to be pumped, applicant argues that the passage provides only a summary of the invention of DenBaars et al. However, the teaching of the passage is not negated by its mere placement in a section that summarizes the invention of DenBaars et al.

Applicant further argues with respect to claims 1 and 8 that DenBaars et al. discuss examples in which only an erbium solid state laser is employed for obtaining light other than RGB light, and therefore do not suggest applicants' claimed invention, which employs a praseodymium solid state laser for obtaining RGB light. However, discussion of the erbium solid state laser of DenBaars et al. serves only to provide examples of the invention of DenBaars et al., and is not meant to be limiting (see Col. 3, lines 63-6, Col. 10, lines 23-48). That is, although DenBaars et al. discuss in detail only an erbium solid state laser, DenBaars et al. teach explicitly erbium and praseodymium to be included among

suitable rare earth metals for employment as dopant metal ions, and therefore provide basis for the employment of both erbium solid state lasers and praseodymium solid state lasers (see Col. 3, lines 3-10, Col. 4, lines 6-9). Further, DenBaars et al. teach that the choice of metal ion for the solid state laser depends on the desired emission wavelength of the solid state laser, thereby rendering obvious to one having ordinary skill in the art to replace an erbium solid state laser with a praseodymium solid state laser for achieving the desired emission wavelength (see Col. 10, lines 23-6).

As to claims 2-7 and 9-14, applicant argues that Smart et al. in no way remedy the deficiencies of Knize and DenBaars et al. However, examiner looks to Smart et al. only for teachings of established quantum mechanics principles describing the transitions required for the emission of specific wavelengths, the transitions occurring independently from the features of the excitation light for obtaining the transitions.

In view of the foregoing discussion, examiner maintains the rejections applied to claims 1-14 set forth in the previous Office action, and which are again set forth below.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,317,348 to Knize in view of U.S. Patent No. 5,796,771 to DenBaars et al.

With regard to claims 1 and 8, Knize discloses a color laser display comprising:

a red laser light source (red solid-state laser means 30) for emitting red laser light (see Col. 3, lines 59-61, Fig. 1);

a green laser light source (green solid-state laser means 40) for emitting green laser light (see Col. 3, lines 59-61, Fig. 1);

a blue laser light source (blue solid-state laser means 50) for emitting blue laser light (see Col. 3, lines 59-61, Fig. 1);

modulation means (red, green, blue light modulator means 20, 24, 28) for modulating the red laser light, the green laser light and the blue laser light based on a red image signal, a green image signal, and a blue image signal (see Col. 3, lines 35-8, Fig. 1);

a screen for displaying red, green and blue when irradiated with the red laser light, the green laser light and the blue laser light (see Fig. 1); and

projection means (scanner 5) for projecting the red laser light, the green laser light and the blue laser light onto the screen so that an image carrying the red, green and blue image signals is displayed on the screen (see Col. 3, lines 42-8, Fig. 1).

Knize does not teach an excitation solid laser unit, having a solid-state laser crystal doped with praseodymium and a gallium nitride semiconductor laser

element emitting excitation light at a wavelength of 440 nm for exciting the solid-state laser crystal, to be employed as at least one of the red laser light source, the green laser light source or the blue laser light source. Instead, Knize teaches excitation solid laser units, each having a fiber laser (fiber lasers 49, 58) comprising glass fiber doped with praseodymium and a diode laser emitting excitation light for exciting the respective fiber lasers 49, 58, to be employed as the green and blue laser light sources, respectively (see Col. 4, lines 49-58, Col. 5, lines 24-35). However, DenBaars et al. disclose an excitation solid laser unit, having a solid-state laser crystal or glass (see Col. 3, lines 3-6, Col. 3, line 63 to Col. 4, line 3) doped with praseodymium (see Col. 3, lines 3-6, Col. 4, lines 6-9) and a gallium nitride semiconductor laser element (see Col. 3, lines 13-37, Col. 5, lines 14-44) emitting excitation light at a wavelength of 440 nm (see Col. 5, lines 32-8) for exciting the solid-state laser crystal (see Col. 5, lines 53-7), to be employed as at least one of the red laser light source, the green laser light source or the blue laser light source (see Col. 4, lines 6-9, Col. 10, lines 23-4). DenBaars et al. teach the use of gallium nitride as a pump source to provide the advantage of allowing for the entire visible region of the wavelength spectrum to be pumped (see Col. 2, lines 24-8, Col. 3, lines 13-37). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute for the laser means of Knize the solid state laser of DenBaars et al. for having the advantage of pumping the entire visible region of the wavelength spectrum.

5. Claims 2-7 and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knize in view of DenBaars et al. as applied to claims 1 and 8 above, and further in view of U.S. Patent No. 5,727,007 to Smart et al.

With regard to claims 2 and 9, DenBaars et al. teach the excitation solid laser unit as discussed above with respect to claims 1 and 8, respectively, to produce red, green and blue laser light, but do not specify the transition steps made for producing the red laser light (see Col. 4, lines 6-9, Col. 10, lines 23-4). However, in an excitation solid laser unit, the emission of laser light of wavelength 600 to 660 nm by a transition of $^3P_0$ -> $^3F_2$ or $^3P_0$ -> $^3H_6$ is inherent to the production of red laser light, as shown by Smart et al. (see Col. 1, lines 43-7, Fig. 1). Therefore, it is understood that the excitation solid laser unit of DenBaars et al. emits laser light of wavelength 600 to 660 nm by a transition of $^3P_0$ -> $^3F_2$ or $^3P_0$ -> $^3H_6$ and is employed as the red laser light source.

With regard to claims 3 and 10, DenBaars et al. teach the excitation solid laser unit as discussed above with respect to claims 1 and 8, respectively, to produce red, green and blue laser light, but do not specify the transition steps made for producing the green laser light (see Col. 4, lines 6-9, Col. 10, lines 23-4). However, in an excitation solid laser unit, the emission of laser light of wavelength 515 to 555 nm by a transition of $^3P_1$ -> $^3H_5$ is inherent to the production of green laser light, as shown by Smart et al. (see Col. 1, lines 43-7, Fig. 1). Therefore, it is understood that the excitation solid laser unit of DenBaars et al. emits laser light of wavelength 515 to 555 nm by a transition of $^3P_1$ -> $^3H_5$ and is employed as the green laser light source.

With regard to claims 4 and 11, DenBaars et al. teach the excitation solid laser unit as discussed above with respect to claims 2 and 9, respectively, to produce red, green and blue laser light, but do not specify the transition steps made for producing the green laser light (see Col. 4, lines 6-9, Col. 10, lines 23-4). However, in an excitation solid laser unit, the emission of laser light of wavelength 515 to 555 nm by a transition of $^3P_1$ -> $^3H_5$ is inherent to the production of green laser light, as shown by Smart et al. (see Col. 1, lines 43-7, Fig. 1). Therefore, it is understood that the excitation solid laser unit of DenBaars et al. emits laser light of wavelength 515 to 555 nm by a transition of $^3P_1$ -> $^3H_5$ and is employed as the green laser light source.

With regard to claims 5 and 12, DenBaars et al. teach the excitation solid laser unit as discussed above with respect to claims 1 and 8, respectively, to produce red, green and blue laser light, but do not specify the transition steps made for producing the blue laser light (see Col. 4, lines 6-9, Col. 10, lines 23-4). However, in an excitation solid laser unit, the emission of laser light of wavelength 465 to 495 nm by a transition of $^3P_0$ -> $^3H_4$ is inherent to the production of blue laser light, as shown by Smart et al. (see Col. 1, lines 43-7, Fig. 1). Therefore, it is understood that the excitation solid laser unit of DenBaars et al. emits laser light of wavelength 465 to 495 nm by a transition of $^3P_0$ -> $^3H_4$ and is employed as the blue laser light source.

With regard to claims 6 and 13, DenBaars et al. teach the excitation solid laser unit as discussed above with respect to claims 2 and 9, respectively, to produce red, green and blue laser light, but do not specify the transition steps

made for producing the blue laser light (see Col. 4, lines 6-9, Col. 10, lines 23-4). However, in an excitation solid laser unit, the emission of laser light of wavelength 465 to 495 nm by a transition of $^3P_0$ -> $^3H_4$ is inherent to the production of blue laser light, as shown by Smart et al. (see Col. 1, lines 43-7, Fig. 1). Therefore, it is understood that the excitation solid laser unit of DenBaars et al. emits laser light of wavelength 465 to 495 nm by a transition of $^3P_0$ -> $^3H_4$ and is employed as the blue laser light source.

With regard to claims 7 and 14, DenBaars et al. teach the excitation solid laser unit as discussed above with respect to claims 3 and 10, respectively, to produce red, green and blue laser light, but do not specify the transition steps made for producing the blue laser light (see Col. 4, lines 6-9, Col. 10, lines 23-4). However, in an excitation solid laser unit, the emission of laser light of wavelength 465 to 495 nm by a transition of $^3P_0$ -> $^3H_4$ is inherent to the production of blue laser light, as shown by Smart et al. (see Col. 1, lines 43-7, Fig. 1). Therefore, it is understood that the excitation solid laser unit of DenBaars et al. emits laser light of wavelength 465 to 495 nm by a transition of $^3P_0$ -> $^3H_4$ and is employed as the blue laser light source.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory

action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Nguyen whose telephone number is 703-305-2771. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

mpn
August 4, 2003

RUSSELL ADAMS
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